

recent presidential address to Section F of the Australasian Association for the Advancement of Science, "On the Origin of the Aborigines of Tasmania and Australia," Mr. A. W. Howitt believes that

"the Tasmanians were the autochthonous inhabitants of Australia, and that their preservation in Tasmania was due to isolation by the formation of Bass Strait. The occupation of the continent by the Australians who, it may be reasonably held, were in a higher state of culture, must have resulted in the amalgamation of the two races, or by the extirpation of the former inhabitants, so far at least as regards the males."

He also suggests that a later wave of Papuan migration was virtually stopped by Torres Straits. He also puts forward

"the following tentative hypothesis: An original Negrito population, as represented by the wild tribes of Malaysia; a subsequent offshoot represented by the Andamanese and Tasmanians, and another offshoot in a higher state of culture originating the Melanesians."

Whatever Mr. Howitt writes is worthy of the careful attention of anthropologists, and it would be well to direct future research with this hypothesis well in view. As Garson, Ling Roth and others have expressed the opinion that the Tasmanians were of Negrito origin (using that term in a general sense), it is rather a pity that Dr. Meyer has not discussed this point.

Finally Meyer discusses the relationship of the Negritos to the natives of New Guinea; he, with Micluk-Maclay, asserts the unity of origin of the Negritos and Papuans, and at the same time insists that the Papuans are diversified and show various types.

"Does it point to a crossing of different elements, or does it simply reveal the variability of the race? I [Meyer] incline to the latter assumption as the simplest and as provisionally sufficient, particularly as in the still so limited state of our knowledge it will be labour lost to try to resolve a race like the Papuan into its various elements."

This is not the place to enter into a discussion on this difficult problem; for the present I can only say that I am inclined to adopt the former view. I certainly have not seen or heard of any trace of Negritos as such, the brachycephals I encountered in New Guinea were no shorter than the dolichocephals, nor had they more Negritic affinities than the latter. Meyer makes the following emphatic statement:

"A Negritic race side by side with the Papuan race nobody has been able to discover, just because it does not exist, and it does not exist because the Papuan race, in spite of its variability, is on the one hand a uniform race, and on the other as good as identical with the Negritos."

A careful perusal of Dr. Meyer's critical study leaves one fact strongly imprinted on the mind, and that is the urgent need for further evidence. There can be no doubt that observation in the field is by far the most important branch of anthropological work at the present time, and all our energies should be employed in this direction. The time is fast approaching when it will be too late.

A. C. HADDON.

BACTERIA.

Bacteria; especially as they are related to the Economy of Nature, to Industrial Processes, and to the Public Health. By George Newman, M.D., F.R.S. (Edin.), D.P.H. (Camb.), &c. Pp. xvi + 351. (London: John Murray, 1899.)

THE author in his preface says that the book is "an attempt, in response to the editor (F. E. Beddard, F.R.S.) of the series (the Progressive Science Series), to set forth a popular statement of our present knowledge of bacteria." "Popular science," continues the author, "is a somewhat dangerous quantity with which to deal. On the one hand it may become too popular, on the other too technical. It is difficult to escape the Scylla and Charybdis in such a voyage."

It may be said at the outset that Dr. Newman has accomplished a very difficult task in a manner which does him credit. Nevertheless, it is to be hoped that in future editions the writer will judiciously curtail certain sections and expand others, and will exercise more caution in laying down doctrines which, in some cases, might mislead the lay reader, and which occasionally even show a wrong conception of the present state of our bacteriological knowledge. That a further edition will be called for at no distant date need hardly be doubted, considering the general excellence of the work.

The first thirty-eight pages deal with the biology of bacteria. This portion of the book might well be curtailed; it contains little information that is new, and much that is old and contained in every text-book of bacteriology.

The second chapter deals with the bacteria in water, and includes much valuable information. It contains a useful reference to *B. enteritidis sporogenes* (Klein), a virulent anaerobe apparently causally related to diarrhoea. The biological treatment of sewage might usefully have been discussed more fully and in a separate chapter. The statement, "The cultivation beds also have an inimical effect upon infective bacteria. Hence the final effluent is practically germ-free as regards pathogenic organisms," must be accepted with caution.

The chapter on bacteria in the air is well and concisely written, but the author quotes an experiment of his own which is a little difficult of comprehension. To quote his own words:

"The writer recently obtained some virulent typhoid excrement, and placed it in a shallow glass vessel under a bell-jar, with similar vessels of sterilised milk and of water, all at blood heat. So long as the excrement remained moist, even though it soon lost its more or less fluid consistence, the milk and water remained uninfected. But when the excrement was completely dried it required but a few hours to reveal typhoid bacilli in the more absorptive fluid, milk, and at a later stage the water also showed clear signs of pollution."

Shattock's interesting experiments are quoted, showing that sewer air does not necessarily exalt the virulence of a strain of lowly virulent diphtheria bacilli. It is to be noted that this does not affect the question of the possibility of sewer air depressing the vitality of the individual, and so allowing lowly virulent bacilli, either already present in the throat or subsequently gaining entrance, to develop and display their full power of pathogenicity.

The chapter on fermentation is a good one and is

more in touch with the original scope of the work as outlined by Dr. Newman himself in the preface. Moreover, there is much that is suggestive to the mind of the bacteriologist seeking for new avenues of research in a most important and imperfectly explored field.

The subject of bacteria in the soil is well dealt with in Chapter v., and the author records some of his own interesting experiments on nitrogen-fixing bacteria.

Chapters vi., vii. and viii. treat respectively of bacteria in milk, milk products and other foods; the question of immunity and antitoxins; and bacteria and disease. There is much in these chapters which will repay careful perusal. Dr. Newman very properly draws attention to Dr. D. S. Davies' persevering and instructive investigation of the late epidemic of typhoid fever at Bristol. It is a little difficult to measure the author's meaning when he says:

"Though the typhoid bacillus appears not to have the power of multiplying in milk, it has the faculty of existing and thriving in milk."

Dr. Newman states that the cause of scarlet fever is unknown. Perhaps it would be fairer to say that some bacteriologists consider that the proof that Klein's streptococcus is the causal agent rests on insufficient grounds.

The last chapter is devoted to disinfection, and the subject is well treated.

The book is rendered attractive with twenty-four good micro-photographs. There are seventy other illustrations; many of these are, as the author admits, diagrammatic. In a future edition some, at all events, of these might be usefully replaced by micro-photographs.

In conclusion, it may be said that Dr. Newman has successfully accomplished a very difficult task. It is true that the author has not altogether fulfilled his original intention of eliminating technical matters, and that exception may be taken to certain statements as being too dogmatic to please the cautious reader and thinker. Yet, judging the book as a whole, it may be said that it is certain to enhance the writer's reputation, and will surely be welcomed by the numerous readers of the publications of the Progressive Science Series. It is to be hoped that a demand for this volume may speedily call for a second edition. A. C. HOUSTON.

OUR BOOK SHELF.

Leitfaden der Kartenentwurfslehre. Von Prof. Dr. Karl Zöppritsch. Second edition. By Dr. Alois Bludau. Erster Theil. *Die Projektionslehre.* Pp. x + 178. (Leipzig: Teubner, 1899.)

DR. BLUDAU, who has devoted much attention to map-projections, and has written some noteworthy papers on the subject, has lately published the first part of his new edition of the well-known work on cartography by Karl Zöppritsch. The book has been thoroughly revised and recast; and the additional matter is so large as to render publication in two parts, issued separately, desirable. The first part deals only with the various projections of portions of the sphere that have from time to time been proposed. Dr. Bludau's object has been to produce a work which should meet the requirements of the present day, and be of real service to cartographers. With this view those projections which are of practical use are fully described, whilst those that may be termed "fancy" projections are only briefly discussed. Every effort has been made to ensure clearness and distinctness, and only those mathematical propositions and formulæ that are

absolutely requisite are given. Dr. Bludau has successfully carried out his programme. The book is well written, and will be of great value and assistance to those who are practically engaged in the production of maps. Every important projection is mentioned with its date and the name of its author; and full use has been made of the researches of Tissot, and the published works of Profs. Fiorini of Bologna, Hammer and others. Dr. Bludau gives a list of the authorities whose writings he has consulted, and it may be noted that it does not include the name of any Englishman. The subject has been much neglected in this country, and nothing of any importance has been published since the papers of Airy and Clarke, and the well-known little book on the construction of maps by Hughes, the last edition of which appeared in 1864. Dr. Bludau gives almost without alteration the useful hints on drawing which appeared in the original "Leitfaden" of Zöppritsch; and there are some tables for the construction of projections. Part ii. is to deal with topography and cartometry, and to contain a number of additional tables. C. W. WILSON.

The Dog, its External and Internal Organisation.

Edited by A. C. Piesse, M.R.C.V.S.; with Anatomical Description by W. S. Furneaux. With five plates and text cuts. Pp. 31. (London and Liverpool: G. Philip and Son.)

THIS is an oblong work of 28 pp. of the puzzle-book order, with five plates, the parts of which are cut out and so arranged in super-position that the reader first skins his dog and then works through its skeletal, circulatory, and muscular apparatus and viscera, until a median longitudinal section is reached. The latter is conspicuous for the delineation *in situ* of the central nervous system, but the entire peripheral system has been mysteriously overlooked.

The first 14 pp. of the text are devoted to a consideration of the history of the dog and of the leading breeds, illustrated by six woodcuts, the remaining 14 pp. to a so-called "Anatomical Description"—in reality an attempt at a general *résumé* of the anatomy and physiology of the vertebrate organism with especial reference to the dog, the whole concluding with a detailed explanation of the plates, the organs and structures represented being indicated by numbers. The work is of too thin and amateurish a character to merit detailed comment in these pages, but while fairly trustworthy so far as it goes, it is wanting in balance and accuracy of detail; and in attempting to express scientific facts in non-scientific terms the authors at times lapse into a looseness of expression apt to mislead.

To define the "Dogs (*Canina*)" as belonging "to the family of Mammalia," and to indulge in feebly stated generalities about the structure of ganglia and the orders of nerve-fibres, to the exclusion of an adequate description of the course and nature of the leading nerve tracts, is but to confuse the mind. We do not know for what class of persons the book is intended. It will be useless to the serious student, and of little avail to the lay reader, as conveying an accurate idea of the most elementary facts. The small modicum of anatomy which it contains, interspersed with passing allusions to habit and to appearances indicative of disease, will doubtless be attractive to some persons, but by those who desire full information, such as can alone be of real service educationally or otherwise, access must be had to well-known authoritative works such as Ellenberger and Baume's "Anatomie des Hundes." The volume before us may perhaps do something to encourage a love of the dog and an appreciation of the beautiful in its construction, leading thus up to the study of the more directly useful; and for this reason we regret the more that a bibliographic list of the afore-mentioned authoritative treatises should not have been given. Without one the present work fails in its most useful purpose.